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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/523,107

02/03/2005

Yutaka Inoue

1254-0268PUS1

8412

2292 7590 03/10/2009
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EXAMINER

A, MINH D

ART UNIT

PAPER NUMBER

2821

NOTIFICATION DATE

DELIVERY MODE

03/10/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No. 10/523,107	Applicant(s) INOUE ET AL.	
	Examiner MINH D. A	Art Unit 2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCE ON 12/08/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 87-100 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 87-100 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is a response to the Applicants' Request for Continued Examination (RCE) filed on 12/08/08. In virtue of this RCE, claims 1-86 were canceled, and claims 87-100 remain pending in the instant application. Request for Continued Examination (RCE) entered.

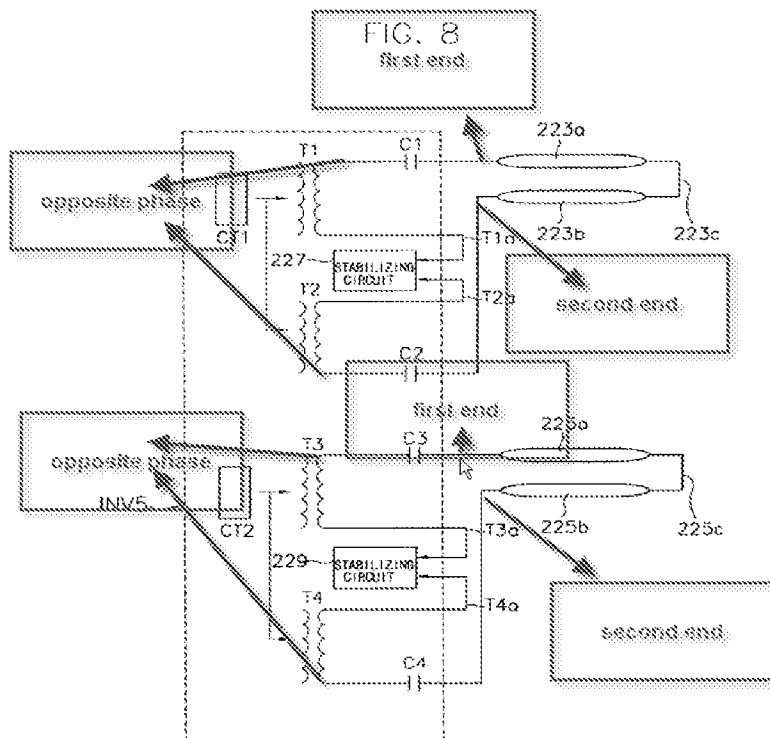
Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 87-88, 9-93 are rejected under 35 U.S.C. 103(e) as being unpatentable over by Shin (U.S Patent No: 6, 661,181) in view of Honbo et al (U.S Patent No: 6,087,757).

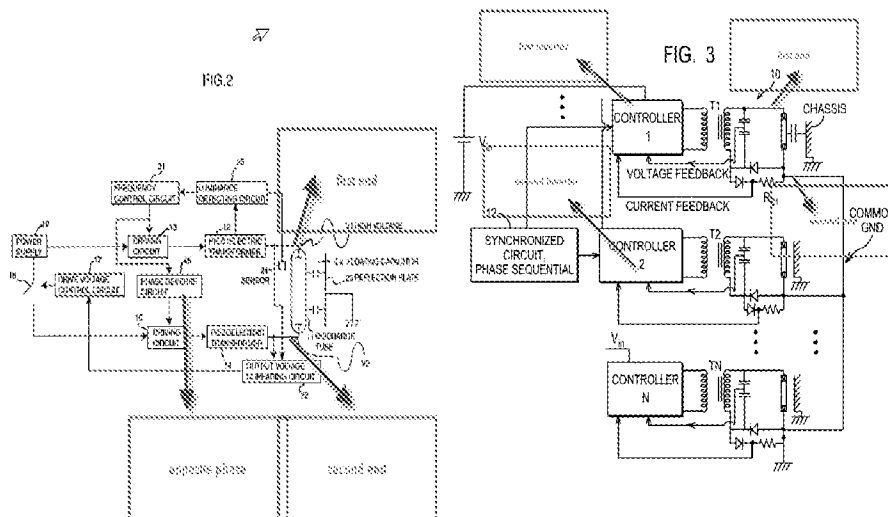


Regarding claim 87, Shin discloses figure 8 above that, a backlight apparatus, comprising: a long tubular fluorescent tube; and a pair of inverter transformers(first inverter transformer (T1-T2) and second inverter transformer(T3-T4) for converting input voltages into high voltages and supplying high voltages having opposite phases to the ends of two the fluorescent tubes(223a-223b) as shown in figure 8 above, wherein each-one inverter transformer(for example T1-T2) of the pair of inverter transformers is positioned in close proximity to one end of the fluorescent tube(223a) and the other

inverter transformer(T2) of the pair of inverter transformers(T1-T2 and T3-T4) is positioned in close proximity to the other end of the fluorescent tube(223b) and the length of a connection between the one inverter transformer and the one end of the fluorescent tube.

Shin does not disclose that, the pair of inverter transformers for converting input voltages into high voltages and supplying high voltages having opposite phases to the ends of the fluorescent tube instead the ends of two fluorescent tubes as shown in figure 8 above.

However, providing an ends of fluorescent tube instead the ends of two fluorescent tubes is well known in skill in the art (see Honbo et al disclose in figure 2 below and another reference of Lin (U.S Patent No: 6, 570, 344, figure 3)).



Therefore, selecting /arranging the exact the ends of fluorescent tube instead the ends of two fluorescent tubes is base upon the design constraints imposed by the driving circuit in which the ends of fluorescent tube designed to be used in. It would have been obvious to one ordinary skill in the art at the time the invention was made to have selected the ends of fluorescent tube of Shin to incorporate the specific the ends of fluorescent tube based upon such design constrains because this is a known as taught by Honbo et al or Lin as shown in figure 2 or 3 above.

Use of the ends of fluorescent tube instead of the ends of fluorescent tubes such a means of electrical connection in lieu of those used in the references solves no stated problem and would be an obvious matter of design choice within the skill of the art. In re Launder, 42 CCPA 886, 222 F.2d 371, 105 USPQ 446 (1955); Flour City Architectural Metals v. Alpana Aluminum Products, Inc., 454 F. 2d 98, 172 USPQ 341 (8th Cir. 1972); National Connector Corp. v. Malco Manufacturing Co., 392 F.2d 766, 157 USPQ 401 (8th Cir.) cert. denied, 393 U.S. 923, 159 USPQ 799 (1968). It also would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the ends of each fluorescent tube instead of the ends of two fluorescent tubes, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Combination Shin and Honbo or Lin do not teach that, the length of a connection between the one inverter transformer and the one end of the fluorescent tube being substantially shorter than the distance between the one inverter transformer and the

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other end of the fluorescent tube, and the length of a connection between the other inverter transformer and the other end of the fluorescent tube being substantially shorter than the distance between the other inverter transformer and the one end of the fluorescent tube for supplying the high voltages to the fluorescent tube.

However, selecting the shorter distance between the one inverter transformer and other end of the fluorescent tube and the length of a connection between the other inverter transformer and the other end of the fluorescent tube being substantially shorter than the distance between the other inverter transformer and the one end of the fluorescent tube for supplying the high voltages to the fluorescent tube is well-known skill in the art, (**Douglas, I made mistake to delete your suggestion**) because it should be understood that the structure of combination Shin and Hondbo or Lin is capable of performing as well, therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the shorter distance and the length between two inverter transformer for supplying the high voltage, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Comment [D01]: again, this a structural limitation, not intended use.

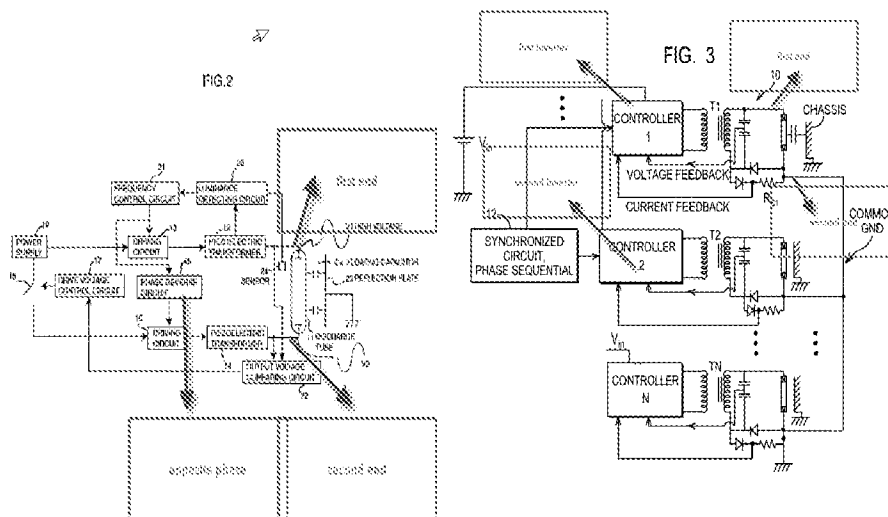
Regarding claim 88, Shin discloses figure 8 above that, a backlight apparatus, comprising: a long tubular fluorescent tube; and a pair of inverter transformers(first inverter transformer (T1-T2) and second inverter transformer(T3-T4) for converting input voltages into high voltages and supplying high voltages having opposite phases to the ends of two the fluorescent tubes(223a-223b) as shown in figure 8 above, wherein each-one inverter transformer(for example T1-T2) of the pair of inverter transformers is

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positioned in close proximity to one end of the fluorescent tube(223a) and the other inverter transformer(T2) of the pair of inverter transformers(T1-T2 and T3-T4) is positioned in close proximity to the other end of the fluorescent tube(223b) and the length of a connection between the one inverter transformer and the one end of the fluorescent tube.

Shin does not disclose that, the pair of inverter transformers for converting input voltages into high voltages and supplying high voltages having opposite phases to the ends of the fluorescent tube instead the ends of two fluorescent tubes as shown in figure 8 above.

However, providing an ends of fluorescent tube instead the ends of two fluorescent tubes is well known in skill in the art (see Honbo et al disclose in figure 2 below and another reference of Lin (U.S Patent No: 6, 570, 344, figure 3).



Therefore, selecting /arranging the exact the ends of fluorescent tube instead the ends of two fluorescent tubes is base upon the design constraints imposed by the driving circuit in which the ends of fluorescent tube designed to be used in. It would have been obvious to one ordinary skill in the art at the time the invention was made to have selected the ends of fluorescent tube of Shin to incorporate the specific the ends of fluorescent tube based upon such design constrains because this is a known as taught by Honbo et al or Lin as shown in figure 2 or 3 above.

Use of the ends of fluorescent tube instead of the ends of fluorescent tubes such a means of electrical connection in lieu of those used in the references solves no stated problem and would be an obvious matter of design choice within the skill of the art. In re Launder, 42 CCPA 886, 222 F.2d 371, 105 USPQ 446 (1955); Flour City Architectural Metals v. Alpana Aluminum Products, Inc., 454 F. 2d 98, 172 USPQ 341 (8th Cir. 1972); National Connector Corp. v. Malco Manufacturing Co., 392 F.2d 766, 157 USPQ 401 (8th Cir.) cert. denied, 393 U.S. 923, 159 USPQ 799 (1968). It also would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the ends of each fluorescent tube instead of the ends of two fluorescent tubes, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Combination Shin and Honbo or Lin do not teach that, the length of a connection between the one inverter transformer and the one end of the fluorescent tube being

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substantially shorter than the distance between the one inverter transformer and the other end of the fluorescent tube, and the length of a connection between the other inverter transformer and the other end of the fluorescent tube being substantially shorter than the distance between the other inverter transformer and the one end of the fluorescent tube for supplying the high voltages to the fluorescent tube.

However, selecting the shorter distance between the one inverter transformer and other end of the fluorescent tube and the length of a connection between the other inverter transformer and the other end of the fluorescent tube being substantially shorter than the distance between the other inverter transformer and the one end of the fluorescent tube for supplying the high voltages to the fluorescent tube is well-known skill in the art, because it should be understood that the structure of combination Shin and Honbo or Lin is capable of performing as well, therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the shorter distance and the length between two inverter transformer for supplying the high voltage, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Regarding claim 91, combination Shin and Honbo et al disclose all of the claimed subject matter, as expressly recited in claim 87 above that, a plurality of the fluorescent tubes, wherein the plurality of the fluorescent tubes are disposed in parallel to one another so that the longitudinal directions thereof are substantially oriented to the same direction, the apparatus further comprising a plurality of the pair of inverter transformers

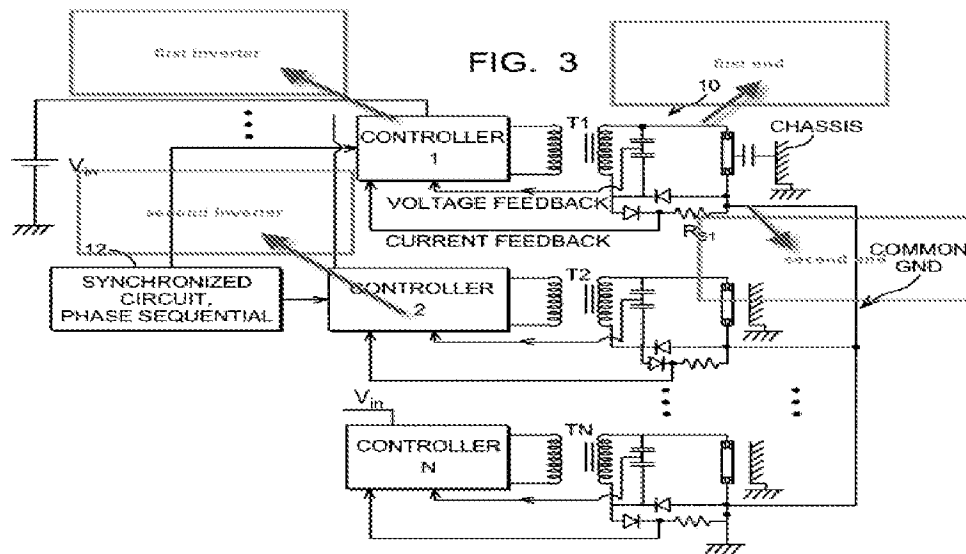
for supplying high voltages having opposite phases to the ends of each of the plurality of the fluorescent tubes. See figure 8 of Shin and figure 2 of Honbo.

Regarding claim 92, combination Shin and Honbo disclose all of the claimed subject matter, as expressly recited in claim 87 that, a plurality of the fluorescent tubes, wherein the plurality of the fluorescent tubes are disposed in parallel to one another so that the longitudinal directions thereof are substantially the same, wherein the pair of inverter transformers(T1-T2, T3-T4 of Shin) each have a plurality of secondary windings for outputting high voltages, and wherein voltages from the plurality of secondary windings of one of the pair of inverter transformers are supplied to the same ends of adjacent fluorescent tubes of the plurality of the fluorescent tubes. See figure 8 of Shin and figure 2 of Honbo et al).

Regarding claim 93, Shin discloses a light crystal display device comprising the backlight apparatus (see figure 8) and a light liquid crystal panel (712)), figure 1, col.1, lines 62-65.

4. Claims 89-90, 94-100 are rejected under 35 U.S.C. 103(e) as being unpatentable over by Shin (U.S Patent No: 6, 661,181) in view of Honbo et al (U.S Patent No: 6,087,757) as applied to claims 87-88 above, and further in view of Lin (U.S Patent No: 6, 570, 344).

Regarding claim 89, combination Shin and Honbo et al obviously disclose all of the claimed limitations, except wherein each of pair of inverter transformer being provide in each of a pair of inverter circuits.



Lin discloses in figure 3 above that, pairs of inverter circuits(controller (1 and 2), note that, each controller(1 or 2) having an half or full inverter, see col.3, lines 30-34) , each pair of inverter circuits for supplying voltages to ends of a respective one of the fluorescent tubes and wherein the pair of inverter circuit are synchronized(12).

It would have been obvious to one having ordinary skill in the art to employ the pairs of inverter circuits disclosed in Prior art of Lin in the backlight apparatus of Shin to achieve the claimed invention. As disclosed in the prior art of Lin, the motivation for the combination would be to obtain the plurality of inverter circuit for supplying high voltages to ends of one of fluorescent tubes and would be to provide sufficient ignition voltage to each CCFL lamp.

Regarding claim 90, combination Shin, Honbo and Lin obviously disclose all of the claimed subject matter, as expressly recited in claim 89 above that, a plurality of the fluorescent tubes; and a plurality of the pair of inverter circuits(controller (1....N) of Lin in figure 3 above), wherein the plurality of the fluorescent tubes are disposed in parallel to one another so that the longitudinal directions thereof are substantially oriented to the same direction, and wherein at least one pair of inverter(controllers) are positioned on the same-end side of the plurality of the fluorescent tubes disposed in parallel such that the inverter circuits(controllers) are adjacent to each other in the direction in which the plurality of the fluorescent tubes are disposed, the inverter circuits(controllers) being connected in a synchronized manner(see figure 3 of Lin for the plurality of inverter circuits and synchronized circuit phase sequential(12).

Regarding claim 94, combination Shin, Honbo and Lin obviously disclose all of subject matter as expressly recited in claims 87-90 above that, an inverter circuit(controller of Lin) used in a pair for driving a long fluorescent tube provided in a backlight apparatus, wherein when a pair of the inverter circuits(controllers) are used for driving the fluorescent tube, one inverter circuit(controller) of the pair of inverter circuits is positioned near in close proximity to one end of the fluorescent tube and the other inverter circuit (another controller)of the pair of inverter circuits is disposed in close proximity to the other end of the fluorescent tube, the length of a connection between the one inverter circuit as shown in figure 3 of Lin and figure 8 of Shin).

Combination Shin, Honbo and Lin do not teach that, the length of a connection between the one inverter transformer and the one end of the fluorescent tube being

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substantially shorter than the distance between the one inverter transformer and the other end of the fluorescent tube, and the length of a connection between the other inverter transformer and the other end of the fluorescent tube being substantially shorter than the distance between the other inverter transformer and the one end of the fluorescent tube for supplying the high voltages to the fluorescent tube.

However, selecting the shorter distance between the one inverter transformer and other end of the fluorescent tube and the length of a connection between the other inverter transformer and the other end of the fluorescent tube being substantially shorter than the distance between the other inverter transformer and the one end of the fluorescent tube for supplying the high voltages to the fluorescent tube is well-known skill in the art, because it should be understood that the structure of combination Shin, Honbo and Lin is capable of performing as well, skill in the art, because it should be understood that the structure of combination Shin and Hondbo or Lin is capable of performing as well, therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the shorter distance and the length between two inverter transformer for supplying the high voltage, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Regarding claim 95, combination Shin, Honbo and Lin disclose a fluorescent-tube lighting apparatus that is provided in a backlight apparatus comprising a long fluorescent tube, the apparatus comprising a pair of the inverter circuits (controllers of Lin) for driving the fluorescent tube.

Regarding claim 96, combination Shin, Honbo and Lin disclose a backlight apparatus comprising a long fluorescent tube and the pair of inverter circuits(controllers of Lin).

Regarding claim 97, combination Shin, Honbo and Lin disclose a liquid crystal display device comprising the backlight apparatus and a liquid crystal panel.

Regarding claim 98, combination Shin, Honbo and Lin obviously disclose all of subject matter as expressly recited in claims 87-90 above that, an inverter circuit(controller of Lin) used in a pair for driving a long fluorescent tube provided in a backlight apparatus, wherein when a pair of the inverter circuits(controllers) are used for driving the fluorescent tube, one inverter circuit(controller) of the pair of inverter circuits is positioned near in close proximity to one end of the fluorescent tube and the other inverter circuit (another controller)of the pair of inverter circuits is disposed in close proximity to the other end of the fluorescent tube, the length of a connection between the one inverter circuit as shown in figure 3 of Lin and figure 8 of Shin).

Combination Shin, Honbo and Lin do not teach that, the length of a connection between the one inverter transformer and the one end of the fluorescent tube being substantially shorter than the distance between the one inverter transformer and the other end of the fluorescent tube, and the length of a connection between the other inverter transformer and the other end of the fluorescent tube being substantially shorter than the distance between the other inverter transformer and the one end of the fluorescent tube for supplying the high voltages to the fluorescent tube.

However, selecting the shorter distance between the one inverter transformer and other end of the fluorescent tube and the length of a connection between the other inverter transformer and the other end of the fluorescent tube being substantially shorter than the distance between the other inverter transformer and the one end of the fluorescent tube for supplying the high voltages to the fluorescent tube is well-known skill in the art, because it should be understood that the structure of combination Shin, Honbo and Lin is capable of performing as well, therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the shorter distance and the length between two inverter transformer for supplying the high voltage, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Regarding claim 99, Shin, Honbo and Lin disclose all of subject matter as expressly recited in claim 98 that, a backlight apparatus comprising a plurality of fluorescent tubes that are disposed in parallel to one another so that the longitudinal directions thereof are substantially oriented to the same direction and the fluorescent-tube driving apparatus.

Regarding claim 100, Shin, Honbo and Lin disclose all of subject matter as expressly recited in claims 98-99 that, a liquid crystal display device comprising the backlight apparatus and a liquid crystal panel. See figure 8 and a light liquid crystal panel (712)), figure 1, col.1, lines 62-65.

Citation of relevant prior art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Prior art Honbo et al (U.S. Patent No. 6,087,757) discloses a driving method and driving circuit of piezoelectric transformers.

Prior art Ito et al (U.S. Patent No. 6,617,807) discloses a discharge lamp lighting circuit for a plurality of discharge lamps.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Dieu A whose telephone number is (571) 272-1817. The examiner can normally be reached on M-F (5:30 AM-2: 45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Owens Douglas W can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Examiner Minh A

Art Unit 2821

Date 2/22/2009

/Douglas W Owens/

Supervisory Patent Examiner, Art Unit 2821

March 2, 2009